

VIRGINIA WILDLIFE

MARCH, 1957



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COMMONWEALTH OF VIRGINIA
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RICHMOND

THOS B STANLEY
GOVERNOR

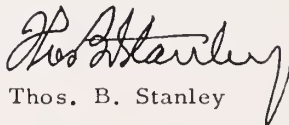
WILDLIFE WEEK IN VIRGINIA

The basic foundation and the strength of our community, state and nation is our abundance of natural resources. The wise use and sound management of our soils, waters, forests, minerals and wildlife cannot be achieved without the guidance and support of an informed public.

Almost everyone has an interest in mammals and other fauna in nature. The week of March 17-23 is being observed across the nation as National Wildlife Week - an expression of national interest in conservation and a means of stimulating greater public support of resource management.

This year's Wildlife Week theme emphasizes the importance of providing adequate living places for the mammals, birds, and fish which have always been an important part of our American scene and have added so much to the beauty and enjoyment of our outdoor areas. The tens of millions of people who enjoy hunting and fishing and visit our parks, forests, and wildlife refuges cannot help but be concerned with this effort.

I am glad to join in this observance by designating March 17-23, 1957, as Wildlife Week in the Commonwealth of Virginia. All citizens are urged to acquaint themselves with our natural resource problems and, in keeping with the national theme, "Make a Place for Wildlife," to give particular support to programs providing for the protection and restoration of wildlife living areas; to encourage the preservation and wise management of natural coverts in our forests, grasslands, streams, lakes, marshes and on arable lands; and within undeveloped and wilderness areas, to work to insure that our animals and the esthetic and recreational benefits that accrue from them will be perpetuated for the America of tomorrow.



Thos. B. Stanley

VIRGINIA WILDLIFE

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond 13, Virginia
A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and
Related Natural Resources, and to the Betterment of Hunting and Fishing in Virginia

COMMONWEALTH OF VIRGINIA



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Commission of Game and Inland Fisheries

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Cover

The smallmouth black bass is mostly a stream fish and is at home in the clear, cool mountain and upper Piedmont streams of Virginia. Artist Duane Raver's four-color painting captures the beauty of this scrappy game fish.

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W. C. KELLNER, *Acting Editor*

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Game Commission photos by Kesteloo

The finding, training and cultivation of dedicated men in conservation is one of the present-day obstacles to conservation achievement and one of the problems that must be solved before conservation can hope to achieve the status of a growing philosophy.

We Need A Conservation Philosophy

By J. J. SHOMON

MODERN America faces several overwhelming and challenging issues but none compare in importance or magnitude to the issues of *democracy* and *conservation*. No other problems, no other issues are as important or as basic as these two. One carries with it strong overtones of philosophy—in fact, *is a philosophy*; the other *must become a philosophy* if it is to succeed.

The issues are clear. The stakes are marked. Where we go and what we become in America will be determined by what we do with these issues. The world is watching. The world is waiting to see what we do, how we accept the challenges that confront us. Will we march on toward an ever greater destiny, remaining the great hope of freedom-loving peoples everywhere, or, will apathy sweep us from power? History will tell.

What we become as a nation and as a people tomorrow will depend on *what we do with our freedom and natural resources today*. The two are inseparable. To continue as a democratic nation we must have both. Freedom without resources soon becomes no freedom at all. Resources without freedom can mean one thing, autocracy or totalitarianism.

Both democracy and conservation must become a way of life if the American dream is to survive. The two constitute, in fact, the very dual core of our democracy.

They are the bivalves of American greatness. Both carry strong connotations of an inner philosophy.

Democracy as an entity, of course, is much broader than a method of conducting government, of enacting laws and regulations and carrying on governmental functions by means of universal suffrage and elected officials. It is that, true. But it is something far broader, greater than that. Since the Declaration of Independence our American democracy has been a means—and the best means yet devised by man—for achieving ends that lie in the great domain of human conduct and the development of human personality. It is, as the American philosopher John Dewey once remarked, “a way of life, social and individual.” Democracy, then, is pretty much a philosophy of life—a way of doing things and looking at things, no matter how we slice it.

As a philosophy, our democracy has seen birth, growth, radiance. It is still growing, glowing, still unfurling greatness. Self corrective, continually under change, refinement, it is destined to become ever greater as a way of life.

Conservation, on the other hand, must yet achieve the status of a philosophy if it is to become a reality. New in idea, born of adversity and difficult of immediate attainment, it must take the long journey. The paths are many, the stumbling blocks and bottlenecks incredibly

great. No single trail, no royal road is emblazoned to this philosophy, any more than there is a single road to any of the intellectual disciplines.

The most effective way to achieve philosophic thinking in conservation is to come into direct and living contact with it. Democracy is a living thing only because we see it in practice every day. True, it is not all perfect and the cynic may laugh when you say it, but the fact still remains it is real. It is a thriving, breathing thing in our everyday lives, regardless of its imperfections.

So it must be with conservation. To be a way of life we must take it from the abstract and make it a very real and living thing. This will not be easy and it will not be without struggle. No good thing in life comes without effort. The freedoms we enjoy today have come because of struggle, and they must be continually won. The battle for conservation is just shaping, is just now really beginning to take form. The odds against it are great and many believe it cannot be won in a nation prone to extravagance and materialism. On the other hand, there are those who believe that unless the battle is won—and won over and over again—the future we face will be empty indeed.

The battle for conservation *can* be won. Just as *freedom* has prevailed against great adversity, so, too, the struggle to sustain our God-given resources can prevail if we choose to have it so.

How can we do this? How can we make conservation succeed? Only one way: by making conservation a way of life, a pattern of human conduct if you please—a philosophy of mankind based upon greater respect and treatment of our life-sustaining natural resources.

I agree, you say. This is fine. We're all for conservation. We give it lots of lip service, but *how* are we going to achieve it? How are we going to get the great and ever increasing masses of American people to do some-

thing about conservation when all we're interested in is more and bigger cars, more gadgets, more this and that, more whoop-it-up today and heck with tomorrow?

Now, my first answer to this is *whoa* a minute. *All* is a big word. Not *all* the Americans are governed by the almighty dollar and *today* alone. Not everybody is so shallow as we are led to believe at first. There *are* other things in life more important than material goods and keeping up with or ahead of the Jones. A calmer, more perceiving observation will reveal Americans to be of nobler birth. Witness, for example, the growing interest today in good music, in the arts, in such things as better schools, better churches, better homes. Witness the interest in nature appreciation and travel and better community life.

I say Americans can be made to fight for conservation just as they were made to fight for freedom. They can be made to do it, and my prediction is, they will do it. They will do it because conservation is on the side of right and goodness and Americans have never turned their backs on these two virtues.

I have faith in Americans, first of all, because we have a democracy founded on faith—faith of peoples in the capacities of human nature; faith in human intelligence and in the power of free minds and pooled cooperative experience. I have faith in conservation because free people can be made to see, and *are* seeing, the basic wisdom behind its requirements.

Granting then that conservation is possible and that it should be a way of life, how can we speed up the day when we can look upon wise resource use as a philosophy? Is there something we should be doing now that we aren't doing?

Yes, there is. Without appearing to be dogmatic in this respect, I would like to suggest three areas of action where much can be done to make conservation a real,

(Continued on page 20)



The great crying need today in America is leadership—leadership in all fields, and conservation is no exception. Conservation philosophy will come when mankind develops a greater respect for and treatment of our natural resources.



The battle for conservation can be won. Just as freedom has prevailed against great adversity; so, too, the struggle to sustain our God-given resources can prevail if we choose to have it so. Conservation is everyone's concern.



Game Commission photos by Kesteloo

The Virginia Resource Use Education Council has compiled a minimum list of conservation books which, in its considered opinion, should be available to all school children of Virginia. There are many other good books that can be added to this list.

You Can Help In Conservation

By HENRY S. MOSBY

Professor of Wildlife Management

Virginia Polytechnic Institute

Member, Virginia Resource Use Education Council

EVERYONE — school teachers, parents, ministers, sportsmen as well as professional conservationists — is interested in having conservation more thoroughly understood and practiced. Exactly how this can be done presents varying problems depending upon the individual's viewpoint and upon the particular natural resource being considered. Many individuals and agencies here in Virginia are, and have been, concerned for several decades with specific plans for the development of a conservation awareness in the Commonwealth. In 1952 a voluntary, spontaneous, and unofficial group united to pool their efforts and thoughts as to how Virginians might promote more intelligent conservation of our natural resources. This group named themselves the Virginia Resource Use Education Council. The Council is made up of individuals acting as private citizens and is composed of educators, public administrators, industrialists, and professional conservationists in the natural resource fields. This Council has undertaken several

activities,¹ primarily concerned with conservation education in our public schools. Most of the Council's activities are designed to inform the public about our natural resources and how they can be more intelligently managed. One of the Council's programs involves the participation of local organizations. *You* and *your* group can help in conservation. Here is how:

The Virginia Resource Use Education Council has compiled a *minimum* list of conservation books which, in its considered opinion, should be available to all school children in Virginia. They recommend to local groups that they accept as a project in conservation education the purchase of this list of books for deposition in their local public school library. Where these books have been placed in school libraries, the children make *wearing* use of them. The total cost of the suggested books is small; the use and value of these sources of information have been shown to be great.

Quite often a specific group, such as a sportsmen's club, becomes interested in having school children know more about hunting and fishing, the animals that are classified as game animals, the wildlife program of the

¹Including the operation, in cooperation with state-supported institutions, of a summer short course in natural resource conservation for public school teachers and the publication of a booklet, "A Look at Virginia's Natural Resources."

state, and what is being done to encourage game and fish. Such a group often will present to the local school library various wildlife publications. Similarly, garden clubs, historical associations and other organizations will present publications which are of special concern to them. Such specialized interests are excellent but they do not present the whole conservation picture. The list of publications suggested by the Council purports to avoid a specialized conservation library and to present information on all of our natural resources — forest, water, soil (including minerals) and wildlife.

The books in the following list will stimulate school children to learn about the natural resources of the Old Dominion. From these books, every school child should be able to say what is meant by conservation, what constitutes good conservation practices and to learn something of what should be done about the conservation of Virginia's natural resources.

Conservation has been defined as "... wise use without abuse." This definition implies that we must know something about the natural resources, how they have been used in the past, how they may be intelligently managed, and what can be done to insure that these renewable resources will be used in such a way that we will have these resources indefinitely. Any group that will assist in attaining this objective will be making a real contribution to the community, the state and the entire nation. *Your* organization can do it.

The Virginia Resource Use Education Council hopes that local groups — urban and rural civic clubs, home demonstration groups, P.T.A. organizations, sportsmen's clubs and others — will supply their local libraries with the books on this list. Should any member of the club or

organization desire to add other titles in his field of interest, so much the better. This list of books can be purchased as an organization project, or individual members of the group can buy specific titles for placement in the library. However done, the cost (from \$75 to \$85) is small and well within the reach of any active group. The dividends on this investment are great. *You* can help in conservation.

MINIMUM NATURE AND CONSERVATION BOOKS
RECOMMENDED FOR PURCHASE BY CIVIC GROUPS
FOR ELEMENTARY AND HIGH SCHOOL LIBRARIES

Elementary School:

Publications by R. W. Eschmeyer, published by Fisher-man's Press, Oxford, Ohio: *Tommy Trout, Billy Bass, Charlie Cottontail, Woody Woodcock, Willie Whitetail, Mac Mallard, Bobby Bluegill, Al Alligator, Freddy Fox Squirrel.*

Huey, Edward — *Child's Study of the Animal World.* Reynal & Co., N. Y.

High School:

Birds

Pearson — *Birds of North America.* Garden City Books, Garden City, N. Y.

Peterson — *Field Guide to the Birds of Eastern North America.* Houghton Mifflin Co., Boston.

Virginia Commission of Game and Inland Fisheries — *Birdlife of Virginia.*

Wallace — 1955. *An Introduction to Ornithology.* Macmillan Co., N.Y.C.

Mammals

Burt & Grossenheider — *A Field Guide to the Mam-mals.* Houghton Mifflin Co., 1952.

Handley & Patton — *Wild Mammals of Virginia.* Vir-ginia Commission of Game and Inland Fisheries.

(Continued on page 23)



In 1952 a voluntary, spontaneous, and unofficial group united to pool their efforts and thoughts as to how Virginia might promote more intelligent conservation of natural resources. This group named themselves the Virginia Resource Use Education Council and is shown here in session.

Some Bear Facts

By ELMER V. RICHARDS
District Game Biologist

THE black bear, one of this state's largest big-game animals, is found today in the wild mountainous areas of western Virginia and in the tangled vastness of the Dismal Swamp. Once ranging statewide, in early colonial times, the black bear is now confined by the advance of civilization to 30-odd counties of the Blue Ridge, Massanutten and Alleghany mountain ranges, and to the 350 square-mile wilderness of the great Dismal Swamp. Preferring a habitat of thick brush and woods, he is seldom seen by the average person, and hunters often spend a lifetime afield without even a glimpse of him. He is an interesting animal known to young and old alike, and currently popularized in the person of "Smokey Bear," of forest fire prevention fame.

In 1955, the Virginia Commission of Game and Inland Fisheries began a three-year research project on the black bear to obtain information for its management as a big-game species. The Commission was assisted with this study by the United States Forest Service and the Virginia Polytechnic Institute's wildlife research unit. Data on reproduction, body measurements, food habits, movement, and numbers harvested were obtained by game workers while in the field during the hunting season.

Black bears have a very low breeding potential and only produce young every other year. A female must be $3\frac{1}{2}$ years old before she is capable of reproduction. She gives birth to cubs in the seclusion of her den during the winter months of January and February. Dens usually are made in rock caves, large hollow trees, or in a tangle of blown-down trees. One to four cubs are produced, two being the average. The young are very tiny at birth, ranging from six to nine inches in length and averaging about one-half pound in weight. The cubs remain with their mother until the middle of the second summer, at which time a "physiological change" of sorts during the

breeding season causes her to drive them away. The cubs are yearlings at this point, weighing about 100 pounds.

The black bear is an omnivorous animal and will eat a wide variety of plant and animal life. Its staple diet consists of acorns, nuts, fruit, berries, and insects. Small animals such as frogs, crawfish, chipmunks and mice are taken when available. A bear will also hunt for wild bee hives in dead snags and then spend days gnawing and tearing through the wood to reach the honey inside. Occasionally, one will raid domestic bee hives, corn fields, or even develop a taste for mutton. Marauding stock-killing bears in Virginia are known to kill sheep, hogs, calves and poultry. In all such cases familiar to this writer, the stock-killer was a male. Deer are seldom eaten, but one badly crippled or already dead often becomes part of a bear's diet. As a rule, however, I do not believe a healthy deer would be captured by a bear.

Available mast was scarce over most of the bear country during the 1955-56 season and during that period only 156 were killed. This was attributed to an increased range in the bear's search for food. Some strange feeding habits were then observed: bears were killed while gorging themselves on black walnuts, eating green hulls and all. There were also three reports of "cannibal" bears eating one another. Two such reports were substantiated by this writer.

On November 23, 1955, while hunting in Page County, Lawrence Pence of Shenandoah killed a male bear which dressed out at 379 pounds. It was killed near Pitt Spring Knob, surprised while eating another male that weighed approximately 100 pounds. During the last week in December 1955, hunters in the Little River area of Augusta County killed a male weighing 200 pounds, which had been squatting on a mound of leaves and sticks. After shooting it, they discovered the partly eaten carcass of another smaller bear underneath the mound.



National Audubon Society
photo by Dermid

It was evident that a great struggle had taken place, and the "cannibal" male killed bore wounds of the fight.

Mature adult black bear average several hundred pounds in weight. Four hundred pounders are usually taken each year by Virginia hunters. An occasional specimen will tip the scales in excess of 500; however, this is rare. Probably the largest black bear killed in this state was taken in November of 1944 by W. N. Haldeman of Hampton. While hunting in the Dismal Swamp, Mr. Haldeman killed one so large that it was impossible for two men to move the animal out; therefore, only the head and skin were taken. The skull measured 31 inches in circumference, 12½ inches in length, and 8½ inches between the ears. From these measurements, it was estimated that this particular trophy would have weighed at least 700 pounds.

A peculiar feature of the black bear is their "denning up" habit in the wintertime. During more severe months they will do this, remaining completely inactive for long periods of time. Although quite similar, it is not a true "hibernation," in which all body processes are slowed literally to a snail's pace. Rather, denning up should be likened to a fitful sleep, broken by a period of mild weather or by the bear leaving the den for water.

The movements of bear during periods of food shortage have always interested wildlife workers. As part of the black bear study being carried out on the George Washington National Forest, some specimens have been live trapped, anesthetized with ether or chloroform, metal tags placed in their ears, and later released. To date, eight have undergone this treatment.

During the following hunting season, one of these tagged bear was shot—a large male trapped on June 6, 1955, by game workers near the Sherando Lake recreation area in eastern Augusta County. It was one of two bear that had been causing damage to the picnic area. As a solution to the problem, both were trapped and



Game Commission photos by Kesteloo

These abandoned cubs provide an excellent opportunity for studying yearly growth in relation to age and weight.

transported to suitable range near Vance's Cove in Frederick County. The bear in question, estimated in excess of 300 pounds, was put to sleep, metal tags #133 and #134 placed in its ears, and released. On November 22, 1955, McAuldsman Campbell of Roseland, Virginia, shot a bear with ear tag #133. The other tag apparently had been torn out. The animal weighed exactly 465 pounds! A remarkable fact was that it was killed approximately four miles east of Sherando Lake, where it was originally live trapped, indicating that a return trip of from eighty to eighty-five miles from Vance's Cove had been completed! This would seem to prove, of course, that bear move considerable distances. It is believed that they cross the entire Shenandoah Valley, from the Alleghany range to the Blue Ridge Mountains, in migration for food.

The total black bear population in Virginia is not definitely established. Estimates by game workers, based on kill records, would place the 1956 population at approximately 2000.

The bear season west of the Blue Ridge Mountains runs for roughly forty-five days, starting at the opening of the general hunting season on the third Monday in November and extending through January 5. The season in Dismal Swamp generally runs from October 1 to November 30. All hunting is done with trained dogs, except during that part of the deer season when they may



One phase of the black bear study at V. P. I. is designed to determine the bear's home range. Some of the individuals were trapped, tagged and released in new habitat.

TABLE I — BEAR KILLED IN VIRGINIA BY REGIONS

| Year | Total Bear Kill | No. Bear Killed In Western Mts. | No. Bear Killed In Dismal Swamp |
|---------|-----------------|------------------------------------|------------------------------------|
| 1955-56 | 156 | 109 | 47 |
| 1954-55 | 270 | 254 | 16 |
| 1953-54 | 359 | 334 | 25 |
| 1952-53 | 327 | 313 | 14 |
| 1951-52 | 148 | 137 | 11 |
| 1950-51 | 313 | 301 | 12 |
| 1949-50 | 151 | 141 | 10 |

be hunted without the dogs. This ruling has long plagued dog owners, however, since about 40 percent of the annual bear kill in the Old Dominion west of the Blue Ridge is taken by deer hunters without using dogs.

During the 1956-57 season, the killing of bear during the regular deer season was prohibited by regulation of the Commission of Game and Inland Fisheries.

This sport has become increasingly popular in recent years and hunting pressure has steadily increased. This

TABLE II — EFFECT OF DEER SEASON ON BEAR SEASON

| Season | Total Bear Kill West of Blue Ridge | Bear Killed During Deer Season West of Blue Ridge | Percentage of Total Kill |
|---------|---------------------------------------|---|-----------------------------|
| 1955-56 | 108 | 46 | 42 |
| 1954-55 | 254 | 64 | 25 |
| 1953-54 | 335 | 129 | 39 |

is noticeable by token of the increased number of bear hunters in the field during the season and the mushrooming of bear hunt clubs in the mountain areas. Membership in these clubs has risen; so have big-game damage stamp sales. On November 26, the first day of bear hunting with dogs in western Virginia during the '56 season, this writer counted 100 cars and trucks filled with bear hunters in the Briery Branch-Reddish Knob-North River area of the George Washington National Forest. That section covers roughly 20,000 acres. Using an estimate of two hunters per car, this would be a total of 200 per-

sons, or one hunter for every 100 acres of bear range. At least 100 dogs were used also. That day, two bear were killed.

The Game Commission placed a minimum weight limit on black bear in 1955, making it illegal to kill one weighing less than seventy-five pounds. This law was designed as a conservation measure to protect cubs.

Sixty-nine percent of the successful bear hunters in 1955 held state hunting licenses. Twenty-six percent bought county licenses, and five percent were non-residents. People came from as far away as South Carolina and New York to hunt this fine game animal.

L. B. Davenport, Jr., in his thesis *Black Bear in Virginia*, written at the Virginia Polytechnic Institute in 1950, stated that over \$1500 is spent by some individual hunters in killing a single animal, taking into consideration all food, lodging, guns and ammunition, dogs, licenses and travel expenses.

Local areas often consider the bear a pest, which must be controlled at all times by placing a bounty on its head. Understandably, when livestock damage occurs, the individual animal to blame *should* be controlled; however, it is unwise to condemn the entire bear population because of the actions of but a single animal.

Virginia's black bear populations are a natural, renewable resource of our state and must be properly managed and controlled. Continued hunting recreation and revenue for the local mountain areas will be the result of such wise management of this species.

Federal Aid For Wildlife Restoration Exceeds \$21 Million

STATE programs to restore and develop the sport fishery and wildlife resources in the 48 states will move at an accelerated pace during fiscal year 1957 with a foundation of \$21,062,000 in federal aid funds, Secretary of the Interior Fred A. Seaton announced recently. This is about two million dollars more than in 1956.

The 1957 total includes the second 20 percent — \$2,693,494 — of the accumulated backlog of federal aid in wildlife restoration funds, the appropriation of which was authorized over a period of five years by an act approved by Congress in August 1955. This reserve of \$13,467,468 accumulated from 1939 to 1946 and particularly during World War II years, when Congress did not appropriate total receipts annually from the 11 percent excise tax on sporting arms and ammunition.

The combined Federal Aid in Fish and Wildlife Restoration program is administered by the Fish and Wildlife Service under the terms of the Pittman-Robertson Act for wildlife and the Dingell-Johnson Act for sport fishing. As prescribed in the two acts, investments are made in restoration activities so that benefits will go to the hunters and anglers who seek recreation and food from the nation's fields and streams.

This year the various state fish and game departments will receive \$16,236,000 for their wildlife restoration projects and \$4,826,000 for their sport fishery activities. (Virginia will receive \$81,849.34 for fish and \$325,287.43 for game.) The wildlife total is an increase of \$1,956,006 over last year's revised apportionment of \$14,279,994, which included the first 20 percent of the accumulated reserve. The amount available for sport fishery projects represents a drop of \$101,400 below the 1956 total of \$4,927,400.

When federal aid projects are approved by the Service, the state fish and game departments proceed to carry out the plans, spending their own funds. The states then submit reimbursement claims for 75 percent of the costs of the project, either periodically or at the completion of the work. The remaining 25 percent of project expenditure is financed out of regular state funds. All equipment, lands, and structures become the property of the states. All project workers are hired by the states and are state employees.



American Forests Products Industries photo

The farm woodlot, if managed properly, will yield the farmer appreciable income and a constant supply of timber products for his own use.

With proper management—

THE FARM WOODS IS AN ASSET

By WILBUR O'BYRNE

Former Extension Forester, V. P. I.

VIRGINIA farmers can grow more wood per acre and grow it more economically than can any other group of landowners in the state. They own more forest land than all others taken together; their holdings are more advantageously located with regard to both markets and transportation.

Broadly speaking, soils which produce the best farm crops produce the best trees. And because farming developed in areas where the soil types were generally good, even the poorer of them will average better than the general run of soils in areas where farms are few, small and unprofitable. So, *the farmer usually starts with a more productive soil.*

A second advantage is that farm forests are usually interspersed with open land, thus reducing the danger of loss from fires, from insects and even disease. Fires which do the most damage are those which come with a wide front, driven by high wind. An open field, a road or other break not only reduces the width of the front, but can be used as a vantage point from which to fight. And in a farming community it is usually possible to spot a fire at a distance and, by helping a neighbor, stop it before it reaches dangerous proportions. It is assumed, of course, that no farmer who cares for his forest is going to let a fire start on his place. Much the same situation holds with insects and disease. There is a better chance of controlling them if a woodland is at least partially separated from infected areas.

A third advantage enjoyed by the farmer is that his mere presence in and about the farm, carrying on his regular activities, provides a degree of protection from fire, theft and other trespass which could be had by non-resident owners only at prohibitive cost. No thief is

going to cut a tree when he knows that the ring of his axe is apt to be heard by the owner. Much the same is true of the night hunter, the picnicker and even the smoker. Realizing that the owner knows, or can easily learn who was present, they are more apt to be careful than they would be if in the center of a large tract belonging to some stranger.

Still another advantage is that the farmer has a market at home for a vast quantity of low-grade material—material which accumulates in the non-farm forest because it cannot be moved economically. It is sometimes said that what a farmer sells brings a wholesale price, but what he uses from his own farm saves him retail prices. The average Virginia farm will use upwards of 15 cords of fuelwood every year. There are also stack poles, pea stakes, fence posts, gate bars and a dozen other needs for which low-grade trees and thinnings are entirely suitable. By working systematically through his forest, a few acres each year, and cutting each unwanted tree as he comes to it, a farmer can gradually get rid of his culls and weed trees without having done more than he would have done in any event. And, as is true with other crops, *we can't grow first-class trees on land that is cluttered with weed species.*

But probably the greatest advantage available to the farmer is that his woods can be a reservoir of useful and profitable off-season work for farm labor, work stock and equipment. Most farm work is highly seasonal. When the hay or wheat crop is ripe, it must be cut or the farmer takes a loss. If he gets it down and a long rain comes, he again takes a loss. If he wants to plow and the ground is too wet or too dry, he must wait until it dries or until it rains. But with woods work, not only

can it be done when it is convenient, it can always be picked up when unforeseen conditions make it necessary to interrupt other work.

Then there is the social side of the farm-labor problem. The day when a farmer could go down to the closest store and pick up a crew to harvest a crop, then turn them loose when the work is finished, is past as far as competent help is concerned. The farmer who hopes to have competent help when he needs it must see to it that that help has steady work and a decent place to live. This is where the farm forest comes in. Instead of "selling his timber" once in a generation, to an operator who brings in his own crew and leaves devastation behind, the progressive farmer will plan his woods work as carefully as he plans other farm enterprises—the principal difference being that he can do his woods work when it is convenient instead of at a fixed time. He may sell a few veneer logs or sawlogs. He may have some lumber custom sawed for use on the farm. He may get out a carload of pulpwood. And there is always firewood for his own and his tenants' homes. But he will do it with his farm labor, and it will go on year after year.

Why haven't more farmers done this kind of thing?

Partly because they are like the rest of us; they take on new activities only when forced to do so by economic pressure, and partly because we, as a nation, are just entering the period when we must watch the corners more closely than we have in the past. We have passed through the exploitation period in our national development and must learn to make better use of what we have if we are to continue to enjoy the standard of living of which we have so long boasted. And high on our list of resources are our soils, our forests and our wildlife.

A few farmers have done many of these things. Not because anyone told them to, but because it was a common-sense program that worked itself out as they figured



Game Commission photo by Kesteloo

A farm woodlot will yield a large variety of products including saw logs, fuel and pulpwood, posts and cross-ties.

and planned to make their farms better places to live. In my work with them, I have found farmers living near pulp mills who figure on cutting enough pulpwood each winter to pay the taxes on their entire farms. If they have time they may cut more, but they *pay their taxes* at least and, in most cases, do the cutting in such a way as to improve their woods. I wish I could say this is a universal practice.

A tobacco farmer of my acquaintance plans to cut a couple of carloads of pulpwood each winter in connection with getting up his fluewood. Each fall he starts cutting where he stopped the previous winter and takes out low-grade trees as he comes to them until he has as much wood as he needs. Among the trees cut is usually enough material to yield two carloads of pulpwood. He sells that. By the time he has finished his wood cutting, it is time to prepare the plant bed. And so on, year after year.

Another tobacco grower followed a systematic forest-improvement program for fourteen years before he got entirely over his woods. And by that time, the trees that were left had "thicked up" so he was ready to start around again. In this way he got approximately 75 cords of wood every year without having sacrificed a tree that had commercial possibilities.

Near Richmond the agricultural pupils in a vocational high school financed some much-needed equipment for their shop by selling the thinnings from the school forest as bean poles.

So I say: it can be done. It is being done!

But it doesn't run itself. Someone must run it. And the question of *who* recalls a comment made by a farm hand with whom I was discussing better cutting practices: "You's exactly right, Cap'n; you's *exactly* right! But if the boss man don't care enough about *his own woods* to come out here and make me do it, I's not gwine t' break my back."



Farmers in the Old Dominion can grow more wood per acre and grow it more economically than any other group of landowners in the state.

VIRGINIA WILDLIFE

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

NEW ASSISTANT SECRETARY OF THE INTERIOR APPOINTED. Ross Leffler of Pennsylvania, for many years a member of the Game Commission of Pennsylvania and for a number of years chairman of that Commission, was recently appointed Assistant Secretary of the Department of the Interior for the U. S. Fish and Wildlife Service by Honorable Fred A. Seaton, Secretary of the Department. Mr. Leffler is known throughout the country as one of the nation's finest conservationists and has a great many friends in Virginia, especially in the state Game Commission. The feeling is that Secretary Seaton has made a top selection for this important position.

VIRGINIA WILDLIFE WEEK WILL BE OBSERVED. William C. Kellner, acting editor of Virginia Wildlife and acting chief of the education division of the Commission of Game and Inland Fisheries, will be the 1957 state chairman for Virginia Wildlife Week. The theme for this year's observance, as announced by the National Wildlife Federation, of which Virginia is an affiliate, will be "Make a Place for Wildlife." In order to prosper and multiply, wildlife must have a good living space. Walt Disney, creator of "True Life Adventure" films, will serve as national chairman.

JUDGING OF WILDLIFE ESSAYS STARTED. The education division of the Commission has received thousands of essays from schools all over Virginia entered in the Tenth Annual Wildlife Essay Contest, sponsored jointly by the Commission and the Virginia division of the Izaak Walton League of America. Dan E. Cantner, of the Commission's education division and chairman of the essay contest, says that screening of the essays is now in progress. When judging is completed, the grand prizes in each grade—from the fifth through the twelfth—and a \$400 college scholarship for the best essay in the senior grade will be awarded at special ceremonies at the Capitol on a date to be announced in the near future.

DATES SET FOR 22ND NORTH AMERICAN WILDLIFE CONFERENCE. On March 4, the 22nd North American Wildlife Conference will convene at the Statler Hotel in Washington, D. C. The three-day meeting, sponsored annually by the Wildlife Management Institute, will see foremost authorities from the 48 states, Canada, Alaska and Mexico spotlight attention on all phases of resource management. The conference theme this year is "Conservation Is Everybody's Business." I. T. Quinn, executive director of the Commission of Game and Inland Fisheries, will attend and the Virginia Commission will be well represented. Since this important meeting is being held so close to Virginia this year, it is hoped that a good number of sportsmen and conservationists will take advantage of the opportunity to attend.

OPERATIONS OUTDOORS DESIGNED TO DOUBLE NATIONAL FOREST RECREATION FACILITIES. Operations Outdoors, a plan to double camping and picnicking facilities in the national forests within the next five years to meet a steadily building demand for such facilities, has been announced by forest supervisor A. H. Anderson, of the George Washington National Forest. Recreation visits to the national forests will hit the 66 million mark by 1962, Forest Service officials predict. It is estimated that recreational use of the George Washington National Forest, located in Virginia and West Virginia, will reach 993,000 in the next five years.

The five-year recreational plan was released following the President's budget message to Congress and is based on a study of recreational use made by the U. S. Department of Agriculture.

NUTRITIONAL EXPERIMENT WITH TROUT UNDERWAY. The Commission of Game and Inland Fisheries has set aside four pools at the Marion trout hatchery and is starting some experimental feeding with specially prepared fish food, according to G. W. Buller, chief of the fish division. This experiment will be made to determine the relative rate of growth of trout using this food as compared with the ground-fish scraps and liver mixture that is commonly used.



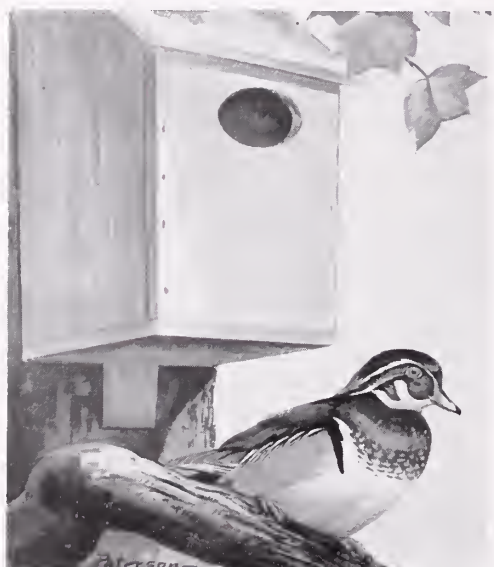
Barn owls are valuable rat catchers and are seldom seen because they carry on their activities at night. They nest in cavities of trees, in caves, or in man-made barns.



Along some sections of the Atlantic coast between Maine and Florida, the bulky nests of ospreys are a frequent landmark. Man-made nesting sites on platforms mounted on poles are sometimes seen.



Plantings for birds, even around several things; create certain nesting sites and furnish food attractive to birds because of summer



In the old days of big trees, the woodduck often used natural cavities or a pileated woodpecker's abandoned home for its nest. Now, man-made boxes are helping furnish more homes for woody.



When trees are trimmed or thinned out, the by-product is a brushpile. These brushpiles, placed near hedgerows, are of great value to small animals and birds and last for years.

MAKE A HOME FOR What Can Be Done?

Here are some courses of action:

Start educational campaigns in your neighborhood and community. Interest your leaders in saving and improving wildlife areas. Tell civic organizations—sportsmen and conservation groups, women's clubs, garden clubs, church leaders—what must be done.

Encourage and support research on wildlife and its living areas. Cures for wildlife scarcities are discovered through study of each animal's needs and the ability of the land to satisfy these.

Show the people who are using the land—the farmers, ranchers, lumbermen, home builders, engineers, in-

dustrialists—how they can manage land without destroying wildlife living areas.

Encourage citizen groups, sportsmen clubs, youth organizations, and wildlife habitat improvement projects.

Get behind the programs of state and federal conservation agencies. They need your help to prevent destruction of natural habitats.

Recognize and support some public lands and waters to insure protection of wildlife habitats.

Protect and defend our natural resources.



A fence row allowed to go back to nature will soon develop good plant growth. Hedgerows and brushy fence lines are "streets" by which wildlife can travel safely from place to place.



Beavers build dams from brush and logs, and it does the most good there. Silt collects in these ponds and, when the dams are abandoned, creates



ard the yard, can do
e a place of shelter,
f d. A bird bath is
summer and winter.



Marshes can be restored or even created. The records show that something like 100 million acres of wetland have been drained in the United States for agriculture alone. Wet areas are ideal home sites for many species of animals and birds.



Where men have dug road cuts through sandy soil or have excavated steep-sided sand pits, the kingfisher finds a nesting place made to order. Unless they consistently raid a fish hatchery, the birds are beneficial to streams by weeding out some of the small fry.

FOR WILDLIFE

What Must Be Done?

manage their lands with-
areas.

conservation and sports-
mens, etc.) to carry out
projects in the field.

State and federal conser-
vative help to stop wasteful
acts.

olicies for using our
protection and improve-

, federal, and private

sanctuaries, refuges, parks, forests, wilderness, and management areas. Stop the invasion of primitive habitats which provide living quarters for endangered animals.

Make it your business to find out if your state's waters are protected against pollution. Fight to keep them clean and useful for wildlife and healthful recreation. **Support the efforts** of private conservation organizations. With your help they can defend wildlife and recreational resources against attack from people who seek to sacrifice these for selfish reasons.

Photos of 1957 National Wildlife Federation Conservation Stamps



Thousands of farmers have developed small ponds on their lands. They make homes for fish, water-fowl and other forms of wildlife.



ed slow a stream where
beby controlling floods.
er and, as they fill and
es rich meadows.



The stickleback, a native of Virginia, builds an interesting home (shown above). Most fish make nests in sand or gravel or deposit their eggs in weeds. Clean water is essential to any game fish for good reproduction.



Some raccoons den in the ground, in logs or ledges, but the den tree shown here is most typical. Modern foresters should spare potential den trees; they are homes for both animals and birds.

The Wildlife Economic Survey And What It Means To Wildlife Management*

By R. D. PATTON

Professor of Economics, Ohio State University

WHATEVER evaluation may be made in future years of the 1955 National Survey of Hunters and Fishermen, the fact can scarcely be questioned that it is both the most extensive and the most solidly based study of hunting and fishing expenditures ever made in North America. It is not the province of the present paper to undertake an evaluation of the statistical procedures involved in the study. Suffice it to say that it is the only study of anywhere near the same extent that has been able to make use of a direct selected interview method of collecting data as contrasted with the use of mail questionnaires. The interview technique, of course, introduces problems and possible biases of its own, but it also permits far closer control of the sample studied. In the hands of such professional experts as

*Address delivered before the 46th convention of the International Association of Game, Fish and Conservation Commissioners, September 14, 1956, Toronto, Canada.

Crossley, S-D Surveys, Inc., not only can the sample be selected by proved mathematical methods, but the interviewers can be specially trained for this particular assignment. The data gathered can be subjected to critical scrutiny not only on a pretest basis but also as an operating procedure while the bulk of the data is coming in to the central office from the field. Nothing approaching this kind of logical, careful and systematic procedure has ever been possible before. Many other investigators have done the best they could with the resources of time and staff available to them. But the present national survey must surely constitute the most dependable source of economic data on hunting and fishing expenditures which those professionally concerned with wildlife management have ever had available to them.

What tentative conclusions or guides to operating policy can safely be derived from the data of the national survey? In general, it is clear that hunting and fishing



Sport fishing is a big business in our country. During 1955, 20.8 million people engaged in fresh or salt-water fishing.



Game Commission photos by Kesteloo

The Wildlife Economic Survey shows that 11.8 million sportsmen hunted during 1955 in our fields and woods.

are big business, even if not quite so big as some earlier investigators have indicated. At a projected total of nearly three billion dollars in 1955 in the U. S. alone, hunting and fishing expenditures are in a class with such other estimated household expenditures for 1955 as electricity at 3.2 billion; telephone and telegraph at 3.1 billion; physicians' services, 3.1 billion; radio and television receivers, records and similar expenditures at 2.4 billion. Hunting and fishing expenditures are significantly larger than the estimated 1.7 billion dollars spent for all spectator amusements such as movies, theater, concerts and sports.

Other comparisons would be interesting and valuable if the expenditure estimates were made in suitable classifications. Since the high and growing productivity of modern industry and agriculture is making possible the use of an increasing share of the national income for recreational purposes, it would be interesting to compare hunting and fishing expenditures with those for other types of recreational activity, beyond those just mentioned. For instance, it would be interesting to know just how much is spent for nursery stock, seeds, garden tools and equipment. Care and improvement of the external home environment has been a conspicuous phase of the ranch house picture-window era of suburban residential construction in the U. S. Gardening and lawn care have become widespread hobbies. Also, if travel for educational purposes or merely to satisfy a restless urge to be on the go could be separated from travel for sport, it would be interesting to see the results. Possibly the U. S. Department of Commerce, which makes and publishes the expenditure estimates given, will revise its expenditure classifications in view of trends in contemporary living. Possibly even the pioneer work of the present national survey of hunting and fishing may be absorbed into the routine of the Department of Commerce, with expenditure estimates on a national basis being made available annually. If this should ever become true, while the detail provided would doubtless be more restricted than wildlife managers would like, the possibility of tracing growth curves and of eliminating errors and weaknesses revealed through the years would be of the highest value.

But being duly thankful for mercies which are really not small, and taking the data of the national survey as they are, it is clear that hunting and fishing provide sufficient relaxation and pleasure to a sufficient proportion of our people to make expenditures for these purposes stand high among both recreational expenditures and those for such necessities of life as public utility services, health services and many others that might be mentioned. Why should this fact contain an element of surprise, as it does to this rank outsider, and as it apparently has to professional wildlife personnel, at least until recent years? Perhaps the answer lies, at least partially, in the fact that hunting and fishing are diffused over wide areas by millions of persons. Spectator amusements are provided by private commercial organizations which are

organized into associations for the purpose of making their voices effective in relation to all matters which affect their well-being. Hunting and fishing, on the other hand, and the wildlife management upon which they depend, bring together a unique mixture of millions of individual sportsmen, an equipment industry only partially involved in hunting and fishing as sports, biological scientists concerned with problems of wildlife that fundamentally affect hunting and fishing, public administrators charged with the administration of laws and funds affecting hunting and fishing, and finally, state, provincial and federal legislators who make the regulatory laws, levy the taxes, and allocate tax funds for the support of hunting and fishing. Among these varied interests, opposing voices are sometimes heard. In this age of great pressures demanding public attention, perhaps hunting and fishing will remain lost in the shuffle, unless there can be developed some unity of purpose among varying interests and organizations in support of long-range programs to make hunting and fishing more available and



Fishing tackle, which is a small part of the total outlay of the fisherman, accounts for millions of dollars in the economy each year.



In addition to room and board, gasoline and a host of other expenditures, the hunter spends a large amount of money on firearms and ammunition.

more satisfying experiences for more and more persons in the years ahead.

Furthermore, even those private businesses which benefit from hunting and fishing cannot be isolated clearly. The national survey indicates that nearly equal sums of 1.3 billion dollars each were spent for equipment and for trips in 1955. These are large sums. But, except in some special instances, how can motel and gasoline station operators know without doubt that their customers are bent on hunting or fishing? Expenditures for food and for the vehicles used on trips are even less distinguishable from other equipment of general use. Thus, it seems to be inherently difficult to bring into a common circle of interest in promoting hunting and fishing all of those who in fact benefit from them.

Another angle of this general problem has great importance. In spite of the wide diffusion throughout our economic system of those who benefit in greater or lesser degree from hunting and fishing, it is not possible to make an adequate assessment of the economic scope of these activities from the value of their product. What is the product of a hunting or fishing expedition? Is it a certain number of pounds of fish or meat? If that is all it is, someone had better tell 25 million hunters and fishermen in the United States that there are cheaper ways to provide for themselves and their families. But everyone knows that the catch or the kill is not all there is to hunting and fishing. In a way, the tangible product is merely a kind of measure of the success of the fishing or hunting enterprise as a whole. Fishing and hunting would lose their zest if there were rarely any tangible product; but they would lose it just about as quickly if the take were ten or a hundred times more abundant than it ordinarily is. In the latter case, they would quickly lose their character as sport and become a routine matter of providing food for the table to be compared with other conventional forms of food production. No, hunting and fishing provide something more than food



The sole purpose of hunting certainly isn't for meat. If that were the case, the millions of hunters could definitely find cheaper means of providing for their families.

to their devotees. There is the break with the routine of work and living; there is the intimate study of the ways of nature and her creatures which man has always found to be endlessly fascinating; there is perhaps travel into a wildly beautiful environment in which man is reminded of and called upon to use the lore of his own primitive origins. While these things defy measurement, who can doubt that they are the really important product of recreational hunting and fishing? Paradoxically, they are perhaps the most real, while being the most immeasurable, aspects of the sport.

If this is true, as I think it is, a number of consequences can be drawn for wildlife management. Those who have an interest in our wildlife, whether that interest be commercial or professional, must persistently endeavor to educate our legislators and others who control the financial support available to wildlife management that it is not to be judged by any reasonable economic value of the fish or game taken. Wildlife management is not to be compared to the management of a farm or a copper mine. Its product is not measured in pounds or tons. In this respect, the International Association of Game, Fish and Conservation Commissioners and the United States Fish and Wildlife Service followed the proper course, in my judgment, in bypassing attempts to assess the value of the tangible products of hunting and fishing, and in turning the present national survey to the other side of the picture; namely to expenditures made on hunting and fishing. These expenditures become an economic measure of the costs which our people are willing to undergo for the benefits of hunting and fishing, whatever the people may believe these benefits to be. An ordinary business enterprise would only incur costs to produce a product which it is anticipated the market would evaluate at a higher figure than the total of the costs in order that a margin of profit might remain for the effort. In the case of hunting and fishing, the matter



V.S.C.C. photo by Flournoy

The thrill of a fox chase is one of the returns of hunting that cannot be measured on a dollars-and-cents basis.

is turned around. There is no market value for game fish and animals which you have taken yourself; there is no market value for trips away from work to pleasant natural surroundings; there is no market value for pleasure in the care and use of fine hunting and fishing gear. We can only assess these things by the expenditures freely made to go out to get them. The welfare of wildlife management depends upon widespread dissemination of this fact.

Having dealt largely in generalities thus far, I would like to use the remainder of my allotted time to discuss some specific points suggested by my friend and wildlife counsellor, Dr. Charles A. Dambach, director of the Natural Resources Institute of my own university. Upon these points the national survey may shed some light. My comments will inevitably contain a large suffusion of my own opinions, which I trust your cultivated noses will enable you to sniff out and reject if you wish to do so. It strikes me as significant that nearly 70% of the fishermen reported taking trips of more than 100 miles for the purpose. The corresponding percentage for hunters is just over 60%. These facts lead me to believe that it would be preferable to provide generally appealing conditions for hunting and fishing where natural conditions are favorable rather than that less satisfactory facilities should be provided merely to make them close to large population centers. This may be entirely wrong, since from 30 to 40 percent of fishermen and hunters either engaged in their sport at or near their places of residence or at least by traveling less than 100 miles. Yet, if proximity to place of residence is of vital importance, why didn't 80 or 90 percent fish or hunt close to home? The answer cannot lie in the absence of facilities, since some kind of hunting and fishing must be possible within 50 miles of any place in the United States or Canada. This would be particularly true of fishing, yet hunters were more inclined to stay near home than fishermen. Part, possibly all, of the explanation of this latter fact is found in the national survey, which shows that residents of large metropolitan centers were ten times more likely to be fishermen than hunters, not counting those who both hunted and fished. By necessity, hunters in large cities would have to travel further to pursue their sport. Yet, in spite of these facts, it seems to me that the data of the survey can preferably be interpreted to indicate that hunting and fishing are sports which are inextricably inter-twined with travel. Perhaps it is the mobility which the automobile and good roads have provided our population which accounts for the growing popularity of hunting and fishing as much as the increasing income level and increasing free time. For the more populous states of the United States, I would feel that the national survey gives a cue to develop the best available terrain for hunting and fishing no matter how far they may be from major population centers. If camping and overnight facilities are available, the very distance from home may be of itself an enticement. We must remember that part of the attraction of hunting and

fishing is to escape momentarily from routine, and distance from home may even add to this effect.

Is there anything in the results of the national survey which would permit comparison of hunting and fishing areas with other economic uses of lands and waters? To some degree, yes. Besides the overall indicated magnitude of the sports of hunting and fishing, there are the intangible values of which we have spoken. Because it is so difficult to make direct comparison between hunting and fishing and other uses of a given territory, it is better not to attempt it. Others have moved into this realm in the past with results that are more likely to be harmful than helpful because of the inherent barriers to valid comparison. Admittedly, some uses of land such as residential, highway construction, farming and industry take first priority. Some types of mining and quarrying may be at least partially compatible with fishing and hunting. Properly managed forest production is almost entirely compatible with hunting and fishing. Many phases of farming are, also. Thus, it is not entirely a matter of hunting and fishing versus other uses. In fact, if present rates of population growth continue for very many more decades, we are either going to lose many of our untamed wildernesses, or we are going to have to become more expert in having our cake and eating it, too—in using our wild areas for hunting, fishing, forestry, some types of residence and perhaps some types of restricted industry, while still preserving as much as possible of their original flora and fauna and their original scenic beauty and attractiveness. We have to learn that these matters require thought, attention and advanced planning. Carelessness and inattention, which have characterized the past, can easily permit the destruction of what the national survey has shown to be a major economic interest. But beyond this, we know that there is also a probably deeper and more widespread, although incommensurable, esthetic interest in wild nature, used but not contaminated by man.

It should also be noted that the national survey makes quantitative and definite many aspects of the hunting and fishing population which I am sure you already know to be true from your general observation and experience. None-the-less, the results are important for all phases of wildlife management, education and research. Of 25 million persons who hunted or fished in the United States in 1955, 20.8 million engaged in fresh or salt water fishing. Of the same 25 million persons, 11.8 million engaged in some kind of hunting. Both groups show a remarkable persistence throughout the range of age groups, although with individual variations between them. Residents of large metropolitan centers were only a third to a half as likely to be hunters or fishermen as those living in smaller centers or in rural territory. Women over 18 years of age were about one third as likely to fish as men of corresponding age, but less than one twentieth as likely to hunt. These facts offer possible guides to action in wildlife management. Perhaps efforts should be made wherever possible to provide facilities

for family living in fishing and hunting areas so that wives might find it pleasant to accompany their husbands on fishing and hunting trips. It is apparent that women and the residents of large metropolitan areas are two large groups not well represented among hunters and fishermen. Insofar as public support is required for the provision of adequate programs for the utilization and development of our wildlife areas and resources, it would seem that additional public support for those programs might be particularly well developed among women and large city residents. Manufacturers of hunting and fishing clothing and equipment might aid in recruiting more women to the sport by providing suitable clothing and especially designed equipment for them. Furthermore, equipment manufacturers should "never under-rate the power of a woman" to encourage "hubby's" expenditures for sports equipment if she shares his interests. Overnight facilities for lodging and eating would encourage the longer trips for sport purposes which are necessary for those living in congested areas. More and more of our people are living in such centers, and if special efforts are not made to sustain and encourage their participation in the sports of hunting and fishing, it is possible that these sports might become more and more confined to those living in the more sparsely populated parts of North America.

Finally, may I comment upon two aspects of the overall wildlife management problem, in which I know you are interested, although my remarks are purely personal and perhaps conjectural. As a university professor, may I say a word for long-run research and planning. The national survey presents a clear and unmistakable picture of hunting and fishing as a large, though diversified industry. A number of the large industrial firms in the United States produce goods and services to as large or larger a total than those associated with hunting and fishing. Such firms spend money on research which, I am sure, must run far beyond any sums available to the administrators of fish and wildlife programs. The avail-

able statistics and experience in general indicate the great growth of hunting and fishing. If funds are not made available for research into all aspects of wildlife management and the use of our wildlife resources to provide hunting and fishing of the most satisfactory possible quality, how can these resources be increased in their service to the public as more and more millions of our people are almost certainly going to demand? How much should be spent for research, I do not know, but I do know that it should be enough to get the results the public has a right to expect. Nor can I say where the funds for research and planning should come from. I can see no reason why license fees should not be increased at least in proportion to our overall growth in national income. Such fees, like taxes on distilled alcoholic beverages, have practical operating limits set by enforcement problems. But if license fees prove to be inadequate to the many demands made upon them, those interested in promoting hunting and fishing have a very good case to make to lawmakers for the allocation of funds from the general revenue, both because of the growing proportion of our population interested in these sports, and because of the growing volume of travel into the scenic portions of our continent, even those humbler ones close to our heavily populated sections. In the United States we are just launching the greatest highway building era in our entire history. Perhaps we should launch a crusade now to follow the increase in highway building with a corresponding increase in expenditure of our national, state and local parks and on all of our wildlife resources for the benefit both of sportsmen and travellers.

In conclusion, those who have read the National Survey of Hunters and Fishermen will realize that I have barely begun to bring out what it means to wildlife management. Every reader will find light and guidance from it according to his own experience and point of view. I hope I have whetted your appetites for your own reading of the report.

CONSERVATION PHILOSOPHY (Continued from page 5)

living entity.

First and foremost is the area of responsibility. Who is it that must put over conservation? Well, obviously it must be the conservationists themselves first. If they don't lead the way, who will? If we're to have a conservation way of life, the conservationists must show the way. Right now, the conservationists are not showing the way adequately. They *can* do this if they will rid their ranks of many so-called lip-service conservationists and acquire the right kind of dedicated servants. If conservationists will recognize their responsibilities—beyond their specialties—to total conservation and enlist the aid of the educators in the education process, the job will be that much easier.

Secondly, we have the area of performance and example. If conservation is to make greater strides in America, the conservationists must turn out a better job

then what they're doing. This calls for better performance within as well as without. America will not buy a poor product and unless conservationists can agree on what is wise and what is good, the public is not going to accept it. Without going into details, conservationists know full well that much of what is being labelled "conservation" today is not really conservation at all. This must be corrected.

Lastly, a conservation philosophy will come only to the extent that leadership is given the conservation movement. The great crying need today in America is leadership—leadership in all fields, and conservation is no exception. The finding, training and cultivation of dedicated men in conservation is one of the great present-day obstacles to achievement and one of the problems that *must be solved* before conservation can hope to achieve the status of a growing philosophy in America.



Many educators are beginning to realize that courses offering conservation practices and concepts should be included in the school curriculum.

Conservation in the Classroom

By DURYEA MORTON*

AT THE Potomac School in McLean, Virginia it is felt that a knowledge of conservation practices and an understanding of the relationship existing between living things should receive an equal place in the instruction program. To this end, all students from the fifth through the eighth grades participate in the natural history courses.

The school, situated in Fairfax County, is surrounded by 55 acres which make it an ideal area in which to study. Classes consist of field trips through the various habitats on the property—fields, woods, streams and the edges produced by each. The classroom, centrally located in the school building for all to visit, is used as a project laboratory and museum.

Ten of the 55 acres have been set aside as a nature trail. Started four years ago by a group of ninth-grade students with extra interest, the trail is now visited by all classes in the school as well as parents and their friends on the weekends. One year with the help of the county agent, Harry Parks, a site was selected for a small pond. This will provide an ideal place to study succession of both plant and animal life. The trails are all marked with signs made by the children to inform the visitor and to suggest what can be seen. Consequently, as the seasons change so do the signs. Feeding stations for birds are maintained throughout the year although they are used more actively in the winter.

Students accompany the county agent on his inspection tours of the property and assist in carrying out the suggestions he makes for care of the fields and woodlots. This past year soil samples were collected and sent to the soil testing laboratory for examination, and more than one thousand white pine seedlings were planted in strategic places by the three girl scout troops and the natural history classes.

This course has been functioning for four years with records being compiled on the daily weather, arrival of spring birds, blooming dates of flowers, winter bird population counts and nesting bird populations. Already interesting comparisons can be made. Through such classes children are developing an interest in conservation and are building a stronger appreciation for proper game laws, intelligent land use and respect for the many natural resources with which Virginia is endowed.

Many school conservation programs that are now highly developed had humble beginnings—a corner in the back of the classroom, or one shelf in the bookcase. To aid the teacher, the state of Virginia offers many fine charts and pamphlets on various phases of natural history, such as the chart of *Fresh Water Fish*, the booklet *Birdlife of Virginia* and the mammal pamphlets. The wildlife essay contest, conducted each year for school children throughout the state, also acts as a tremendous stimulus. Additional information can come from the school or local library, while films for assembly programs can be borrowed or rented from agencies like the Commission of Game and Inland Fisheries, the Izaak Walton League, the U. S. Department of Agriculture or the National Audubon Society. The teacher may want to increase her teaching knowledge by attending the Resource-Use Workshop summer sessions at several of the state colleges. The schoolyard, town park and any state or national park in the vicinity of the school itself can all be used for field trips and firsthand knowledge.

With natural areas giving way to the bulldozer and housing developments, our children are less able to know the outdoors and all it has to offer. Teachers throughout the state and country should work to build this attitude, thereby adding to the appreciation of the student but, more important, assuring the constant overseeing of our natural resources for years to come.

* Instructor, Potomac School, McLean, Virginia.

The Honorable Bluegill

By BILL COCHRAN*

PERHAPS you know him as the bream or brim, or maybe the dollardee, blue sunfish or blue perch, but they all add up to one unique panfish—the bluegill. The bluegill is the largest and best of all the true sunfishes that belong to the Centrarchidae family. He is roundly shaped and sports a large, sharp, dorsal fin, a rather large eye, and a small mouth. The average bluegill has a dark greenish back that fades down his broad sides to a dusty yellowish-orange breast. Extended from the tip of his gill cover is a dark ear flap, and several dark bars run from his back vertically to his undersides. All this adds up to a very colorful freshwater fish.

The bluegill is widely distributed in ponds, lakes, and streams throughout the United States and parts of Canada. His prolific breeding and ability to quickly adapt to different conditions make him an ideal fish for stocking ponds and lakes.

Breeding takes place in the spring and if conditions are favorable, again in the summer. Nests, often in colonies, are constructed in sand or fine gravel. These are defended by the parent fish while the eggs are incubated. The fingerlings quickly grow into maturity under favorable conditions. However, if the population is not kept in check by a cannibal fish, such as the largemouth bass, the water will become over inhabited and their growth will be stunted. Bass and bluegill are a common combination used in stocking warm-water ponds because the bass thrive on the bluegill, and under proper conditions the bluegill population is checked by the bass. This results in a better life for all concerned.

The bluegill is a great sport fish. His wide distribution, fighting ability when hooked, and food value make

him well known and liked in the rounds of angling. He is successfully taken on a wide assortment of tackle and by many different methods including still fishing, fly casting, trolling, and ice fishing. Many a young boy has

started his fishing career going after bluegill with a long cane pole,

length of string, cork bobber, and a gob of

worms hooked on a bent pin. Just as

his first fish was hooked, so was

he — a fisherman for life.

Worms, crickets,

grasshoppers, grubs, and

insect larvae are choice live

bait for the bluegill. He also feeds

on small minnows, mollusks, crustaceans, and

vegetable life. When in the mood, he

will bite most anything that resembles food,

but don't take him for a pushover. He has good fish sense and, at times, can be quite stubborn by refusing choice baits.

While fishing for the bluegill with live bait may be more productive for the average angler, it may not be as sporting. It is great fun to take him with a light fly rod, thin leader, and artificial bait. A nymph, wet fly, or spider zig-zagged over weed beds with slow jerks and pauses makes quite a target for a hungry bluegill, and a dry fly or small popping bug is irresistible to him when he is surface feeding. At times, a spinner or small plug is just the trick to take him. It is a good idea to carry a well rounded assortment of baits when you go after him so that any fishing situation encountered may be handled successfully. The lures should not be too large because his mouth is rather small.

Only by using light tackle can the skill and strength of the bluegill be fully appreciated. Ounce for ounce he can fight with the best of them. He may take your bait with a slight nibble or hard strike, but once he is hooked he will hang to the bottom, weaving and circling back and forth with his flat side toward you, fighting all the



*We are pleased to present another article by the author of "The Modern Bowhunter in Virginia," published in the October 1956 issue of VIRGINIA WILDLIFE.

way. Not only is he the scrappiest little fish you will encounter, but you will find him hard to beat in good eating, also. When properly cleaned and prepared, his firm flesh makes a sweet, tasty dish well worth fishing for.

Bluegills usually travel in schools, and on hot summer days they prefer deep water where it is cool. Early mornings and evenings will find them closer to shore in search of food. They are fond of sheltered water and many times can be found around docks, lily pads, logs, stumps, weed beds, old boats, or anything that offers them protection. Once you find where they are located and what they are feeding on, you will be successful in your quest for the bluegill.

Whether you go after him in a big boat with the most expensive fishing equipment possible to buy or sit on the bank barefooted, fishing with a freshly cut sapling, you are sure to find pleasure. He is an honorable fish: hard fighting and good eating. He won't let you down.

HELP IN CONSERVATION (Continued from page 7)

Reptiles

Pope, C. H. 1956. *The Reptile World*. Alfred Knopf.

Insects

Klots — *A Field Guide to the Insects*. Houghton Mifflin Co., Boston.

U.S.D.A. — 1952. *Insects, Yearbook of Agriculture*. Supt. of Documents, Washington, D. C. (Available through Congressman).

Fish

Virginia Commission of Game and Inland Fisheries — *Freshwater Fishing and Fishlife in Virginia*.

Trees — Forestry

Virginia Division of Forestry — *Forest Trees of Virginia*. Charlottesville, Va.

U.S.D.A. — *Trees, Yearbook of Agriculture 1949*. Supt. of Documents, Washington, D. C. (Available through Congressman).

Collingwood & Bough — *Knowing Your Trees*. American Forestry Assoc., 919 - 17th St., N.W., Washington, D. C.

American Forestry Assoc. — *Trees Every Boy and Girl Should Know*. American Forestry Assoc., 919 - 17th St., N.W., Washington, D. C.

Elliott and Mosley — *Southern Forestry*. Kingsport Press, Kingsport, Tenn.

Rocks and Minerals

Pough, F. H. — *A Field Guide to the Rocks and Minerals*. Houghton Mifflin Co., Boston.

Place, Robin — *Down to Earth*. Philanthropical Library, N. Y. C.

Conservation — General

Virginia Resource Use Education Council — 1955. *A Look at Virginia's Natural Resources*. P. O. Box 3745, Richmond 26, Va.

Allen, S. H. — 1955. *Conserving Natural Resources, Principles & Practices in a Democracy*. McGraw Book Co., N. Y. C.

Allen, D. L. — 1954. *Our Wildlife Legacy*. Funk and Wagnalls, N. Y. C.

Pinkerton — *Nature Roundup*. Harper Bros.

The following publications contain excellent materials on conservation, written for the Boy Scouts of America. They may be obtained from: The Boy Scouts of America, 2 Park Ave., New York 16, N. Y. or purchased from any book store handling boy scout supplies. The catalogue number and titles are as follows:

Cat. No. 3291 — *Soil and Water Conservation*; 3285 — *Nature*; 3284 — *Geology*; 3813 — *Reptile Study*; 3302 — *Forestry*; 3370 — *Botany*; 3282 — *Bird Study*; 3348 — *Insect Life*; 3385 — *Taxidermy*; 3300 — *Wildlife Management*; 3356 — *Zoology*.

In addition to the above listed books, there are many other good conservation books; for example, *The Golden Book Series on Trees, Reptiles, Shore Life, etc.*, and *The World We Live In*, 1955, Life Magazine, N. Y. C.

Science Sidelights

A tiny, reddish-yellow ant, missing link in ant evolution, has been found in Ceylon.

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A hitherto unknown species of fish that looks like a swimming pine cone has been caught off the coast of Chile.

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Bats have been found to be important reservoirs of rabies in the United States.

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Ten nations have joined in scientific warfare against hordes of locusts in the Near East.

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A new poison has been found to be successful in controlling the sea lamprey pest.

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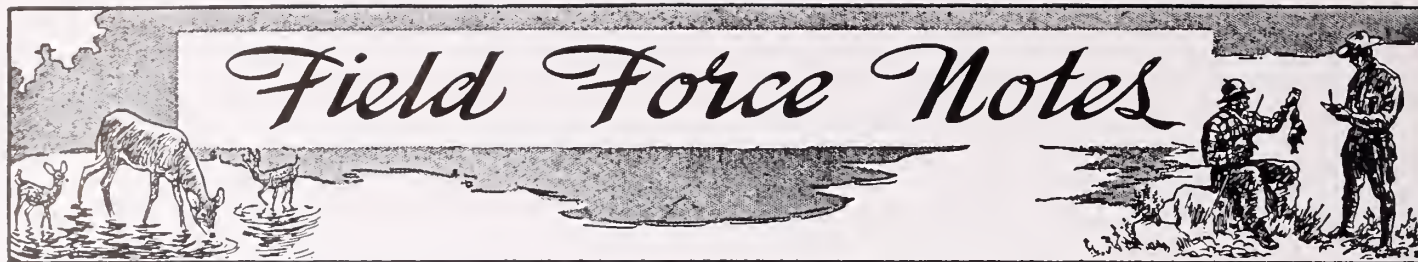
Soft-shelled ticks are known to be carriers of tularemia, or rabbit fever.

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A new sense organ, the tambour organ, which detects changes in pressure, was found in mosquitoes and closely related flies.

.

Lady beetles have been imported into Florida from India and Pakistan to war on aphids, mites, scale insects and other citrus and vegetable pests.



Freak Deer Bagged in Southampton County

Upon close observation, you will find that the trophy pictured below is rather odd looking in appearance. It was taken by Donald Rountree, Jr., a member of the Newsom Hunt Club and bagged in Porter's Woods in the



Donald Rountree, Jr. with the freak deer bagged in Southampton County during the past season.

south central part of Southampton County. A Commission biologist, upon examination, placed the animal's age at seventeen months. It closely resembles a deer in that it has a natural deer color background, but there the similarity almost ends. A number of large brown spots cover the body (see photo) and when its measurements were compared with those of a button buck, the body and legs were determined shorter by approximately four inches. Local hunters are inclined to believe that it's a cross between a deer and a goat.

The Commission receives many reports each year of such strange specimens. But biologically speaking, a cross between a deer and a goat is impossible. The gestation period of the deer runs approximately 210 days, while that of the goat is only 146-152 days in length, a difference of over four months—too great a difference.

So it would seem that this is just another one of nature's weird tricks. Odd specimens occur in all populations now and then, including our own. And even if such a hybrid were conceived, what would you call it, a geer or a doat?

Waltonians Honor Virginia Wildlife Editor

The State Division of the Izaak Walton League honored Mr. Joseph J. Shomon, of the Commission of Game and Inland Fisheries, with the presentation of a special meritorious service award for services rendered to conservation in Virginia. Mr. Shomon has been editor of *Virginia Wildlife* for the past nine years, and is currently on leave of absence without pay, doing graduate work in conservation at the University of Michigan.

The presentation in behalf of the League was done by a special Wal-tonian committee consisting of Beverley Tucker, Jr., local I.W.L.A. chapter president, Ross Walker, J. H. Adams, Ted Flippen, and Charles Morrison. I. T. Quinn, executive director of the Commission, participated in the formal ceremonies held in the offices of the Commission in Richmond.

The engraved and framed service award, in the form of a mahogany plaque, was signed by C. I. Van Cleve, State Division president of the League.

GiCoVa Wildlife Association Sponsors Shooting Safety Program

The three proud youngsters pictured have just completed a necessarily thorough and exacting course of training. The course is sponsored by the GiCoVa (Giles County, Virginia) Wildlife Association in collaboration with the National Rifle Association, and having met all requirements, Ronnie Blankenship, Danny Turner, and Rodney Havens are receiving their certificates from G. B. Campbell,

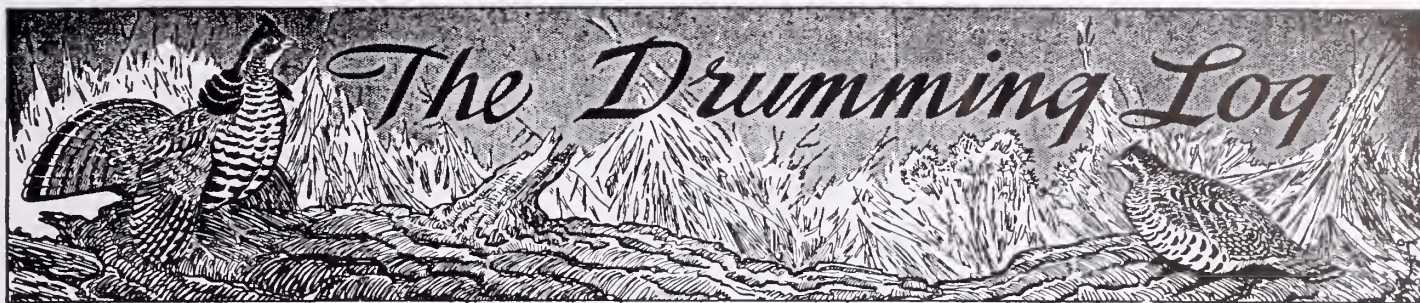
president of GiCoVa and an NRA instructor.

The Sporting Arms and Ammunition Manufacturers' Institute, in their booklet entitled *What Every Parent Should Know When a Boy or Girl Wants a Gun*, states that satisfying the natural desire in many children to own and shoot firearms need pose no problem when that desire is satisfied under properly safe and sane conditions. "Most authorities on youth agree," the Institute says, "on the value of proper shooting training in developing both personal and social responsibility. Recreational and physical education leaders consider marksmanship superior and rewarding exercise; they value its contributions to good physical and mental growth."



G. B. Campbell, president of GiCoVa Wildlife Association and an NRA instructor, presents certificates to Ronnie Blankenship, Danny Turner, and Rodney Havens.

It is very likely that if more of the hunters and sportsmen afield today had had such training available to them in their youth, there would not be as many shooting accidents as there now are. The National Rifle Association, the Sportings Arms and Ammunition Manufacturers' Institute, the GiCoVa Wildlife Association and thousands of other organizations working hand in hand to promote this program are to be highly commended for their interest and the donation of much time and effort.



Dean Receives Progressive Farmer Conservation Award

The *Progressive Farmer* has bestowed its "Man of the Year" award upon state forester George W. Dean, for his tireless efforts toward the conservation of Virginia's natural resources.

Since his appointment in 1944, Dean has piled up an impressive record in the management of this state's forestry program, promoting and improving forest fire prevention, the tree planting program, the expansion of nursery facilities, and the over-all management of the Virginia Forest Service.

To date, under his directorship, over two million forest acres have been serviced, about 500,000,000 board feet of lumber, more than 100,000 cords of pulpwood, and almost 200,000 seed trees have been marked by his foresters. The nurseries will provide the state with 30,000,000 trees for planting this winter and early spring—a record figure in itself. It is also much to Dean's credit that Virginia heads the fire record honor roll among all northeastern and southeastern states.

One vocational agriculture leader said that "every farm in Virginia has been touched because of George Dean's work."

Prior to his appointment as state forester, Dean served as chief of the forest management division and as district forester of the Richmond district. He is a past president of the State Foresters' Association and has received many state and national honors for his work in conservation.

Disease Attacks City's Elm Trees

A bulletin released recently by the Department of Recreation and Parks warns that Richmond's elm tree population is being threatened by the

Dutch Elm Disease, and urges property owners to spray their elms with a heavy solution of DDT during the dormant season to protect them.

The Department is currently conducting a \$109,000 program to save our street and park elms, and civic-minded citizens will want to lend their full support in helping to keep Richmond the attractive city that it is.

Fish and Wildlife Service Initiates Expansion Program

According to a Department of the Interior bulletin, Secretary of the Interior Fred A. Seaton has asked the recently reorganized U. S. Fish and Wildlife Service to formulate plans for broadening conservation programs for both fish and wildlife resources.

"The challenge of soundly managing our commercial fishery resources to assure a continued harvest and of meeting the growing demand for opportunities to fish and hunt at a time when those opportunities seem to be diminishing must be met head-on," Seaton said.

In compliance with Seaton's request for a blueprint of action, a special task force, consisting of a committee of the two groups representative of the Service's component bureaus, was formulated to begin work on long-range plans and objectives.

In a memorandum issued to all Fish and Wildlife employees, Seaton defined some of these objectives. They include a review of policies and projects and development of the Service's responsibility in the conservation field, and provisions for a working order that assures federal, state, and private conservation activities of complementing one another.

Two important goals will be the initiation of a land-acquisition program designed to meet both federal

and state needs in wildlife management, and a solution to the threat of destructive drainage of wetlands and marshes for migratory waterfowl.

Other legislation, as approved by Congress, has authorized the Service to begin work on expanding commercial and sport fishing programs, and on January 7, 1957, members of both task force committees will be given leave from their regular positions and assigned to the Service's Washington office, "for the period of time required to complete their job."

Wildlife Paratroopers

The wildlife people in California and Florida have come up with a relatively simple solution to the problem of planting game birds in those inaccessible regions providing for more favorable habitat restocking. They just fly over the areas and the birds bail out.

This unusual method is made possible, in part, by the "built-in parachutes" which chukar partridge and wild turkey possess. This past year, a great number of the partridges were released from planes flying approximately 100 miles per hour and 200 or 300 feet above ground. The birds fell helter-skelter for a few feet, then righted themselves and glided to the ground within a quarter mile of the predetermined target. No casualties were reported.

In Florida, several dozen wild turkeys similarly chuted from planes at an altitude of 200 feet, traveling about 50 miles per hour. They, too, landed without incident.

Idaho and Wyoming went this one better some years ago when they planted beaver from the air. Chutes were attached to specially constructed boxes which, upon impact, fell open and released their occupants. Even fingerling fish have been successfully planted by this method.

Federal Reorganization of Sport Fisheries

The increasingly popular pastime of sport fishing, now a veritable American institution, may well be in line for a more promising future. The recent announcement (November 5) by the Secretary of the Interior to the effect that the reorganization of the U. S. Fish and Wildlife Service, in accordance with provisions of the Fish and Wildlife Act of 1956, is a formidable stepping stone in the right direction.

Under the act, two new bureaus have been formed, the Bureau of Commercial Fisheries and a Bureau of Sport Fisheries and Wildlife. Although considered a modest expansion at present, it is expected that it will focus more attention and expenditures where both are needed.

Sport fishing has enjoyed an almost phenomenal growth, at present the favorite recreation of some 21 million Americans and a two-billion-dollar-a-year business.

Special programs will embrace development of hatcheries, propagation techniques, training of technical personnel, statistical research, chemical controls, etc.

With its importance as a vital commercial and recreational resource proportionately re-evaluated, there is definite promise that sport fishing will be preserved for future generations.

Fish and Wildlife Film Receives International Award

An official U. S. Fish and Wildlife Service film was awarded the Silver Medal by the Twelfth International Sports Film Festival, an annual affair at Cortina d'Ampezzo, Italy.

The fifteen-minute sound and color documentary takes its audience along on an actual hunt, clearly illustrating the methods used in the pursuit and capture of the formidable lions. Additional interest is supplied by scenes of the puma's natural habitat in the western mountain country and subtropical Florida. Interspersed throughout the film are excellent shots of other North American predators such as the coyote, wildcat, grizzly bear, etc., and some of the puma's preferred

prey, including livestock, deer, and elk.

The film is produced in cooperation with *Sports Afield* magazine and is available to schools, clubs, and other interested groups free of charge except for return postage. It should be ordered directly from the U. S. Fish and Wildlife Service, Section of Visual Information, Box 128, College Park, Maryland.

Growth Rate of Trees Influenced by Day Length

Scientists of the U. S. Department of Agriculture have recently confirmed that a tree's growth rate is affected by the length of day.

A series of tests supported the fact that short days induce dormancy in the growth process, while long days prolong it. The Agricultural Research



"You and your cigars!"

Service scientists explain that a short day contains eight hours of natural light, while a long day is eight hours of sunlight in addition to varying quantities of supplementary light. When different trees were subjected to both short and long days, the results showed that many will maintain a continuous rate of growth on sixteen hours of light. These include American elm, dogwood, red maple, Asian white birch, tulip poplar, and catalpa. Some varieties, however, such as sweet gum, horse chestnut, and paulownia, will not do this.

It was also determined that eight hours of natural light is not sufficient for most trees, and they will cease to grow within four weeks when restricted to that amount. There are exceptions, however; elm trees, for example, will continue to grow for 140 days afterward.

The tests, considered conclusive, should prove invaluable to orchard proprietors, farmers, etc., who will now profit by selecting those varieties appropriate to the latitudes in which they are grown.

Virginian (Also) Designs '57 Duck Stamp

From more than one hundred entries submitted in this year's duck stamp design contest, Virginian Jackson Miles Abbott took top honors.

Abbott's design is a tempera watercolor depicting two American eider ducks skimming low over a frothy surf. A stamp representing brants was chosen for second place; it too was Abbott's work.

Abbott has evidently inherited a good bit of skill from his father, Jacob Bates Abbott, who himself a well-known wildlife artist, instructed his son in the painting of birds and animals.

Among the six waterfowl experts who judged entries from 28 states and the District of Columbia was Edward J. Bierly, whose excellent portrait of two American mergansers is featured on the current stamp. Bierly, incidentally, is a Virginian. We take this opportunity to congratulate our native sons.

Antelope No Longer Patronize Wyoming's U. S. 30

Judging from a Missouri Conservation Commission news release, the wildlife people there may try to solve their deer-vs-the-automobile problem the same way Wyoming has.

With Wyoming, however, it was antelope rather than deer which were stubbornly migrating back and forth across public highways and constituting a traffic hazard. Federal aid regulations called for fencing along interstate highways, but the Game and Fish Department maintained that if migration paths were blocked, the antelope population would ultimately be wiped out.

At any rate, they've finally come up with the solution, and a novel one at that. Every two miles along U. S. 30 . . . all 300 miles of it . . . they have constructed underpasses—to be used exclusively by antelope!

Wildlife Questions and Answers

Ques.: Since it is known that a deer will shed its antlers each year, how is it possible for a buck to grow a 16-point rack over a period of a single year?

Ans.: Without going into the histology of antler growth, let us say that the number of points a deer will grow in one year is dependent upon the quality of the food eaten. A recent study by Pennsylvania on antler development produced some information that should clarify this question. Several fawns were captured and kept in confinement over a two-year period. These deer were fed a diet ranging from excellent to very poor. Those deer receiving a complete ration showed excellent antler development in both the first and second year with up to 14 points in the second season. Deer on incomplete rations, however, showed very poor antler development with spikes ranging from 7 to 13 inches in length during the second year.

Ques.: When cleaning fish, is it necessary to remove the gills immediately?

Ans.: If the fish are utilized at once the gills do not have to be removed. However, if the fish are to be kept for any length of time the gills should be removed because spoilage usually begins in the gill section.

Ques.: We often use lizards for bait when fishing. Many of them die before we have a chance to put them on a hook. How should these animals be kept so that they will stay alive?

Ans.: It is perhaps the salamander you are using rather than the lizard. Lizards are usually found in dry situations while most salamanders are found in moist surroundings. The best method of collecting and carrying salamanders is in a damp cloth bag. Wet moss, leaves, or vegetation will usually retain enough moisture to keep these animals alive for use on a fishing trip. The material can be dampened occasionally if it becomes dry.

Ques.: When selecting hooks for a fishing trip, what is the best rule to follow?

Ans.: The best rule to follow in selecting hooks is to let the size of the fish's mouth govern your selection. If you are fishing for a fish with a small mouth, for example a bluegill, select a small hook. If a fish such as the largemouth bass is the object of your efforts, then choose a larger hook.

Ques.: When was the house rat introduced into our country?

Ans.: Authentic records are not available on the exact date this animal came to the United States, but it first appeared in our eastern ports around 1775. This rodent had spread across the American continent and began appearing on the Pacific coast by 1851.

Ques.: When speaking of fish, what is meant by the word "fingerling"?

Ans.: The period of a fish's life when it reaches approximately three to four inches in length is known as the fingerling stage. This is a coined word to reveal the approximate size of the fish by comparing it with the length of a person's fingers.



"I know I said I'd face death for you. But that bear isn't dead."

Ques.: What is the recommended procedure for controlling crayfish burrows in a farm pond?

Ans.: The selection of a control method depends upon the habits of the crayfish in your pond. If the crayfish eat vegetable matter on the ground surface, the best control method utilizes poisoned bait which is prepared as follows: mix one pound of 50% wettable DDT powder into 1½ gallons of water. Using this mixture, thoroughly wet 1½ bushels of cotton seed or corn cobs ground to the approximate size of cottonseed. Broadcast the mixture on the ground around the entrance to the burrows. This quantity is sufficient to treat ½ acre of badly infested land. This particular crayfish builds no "chimneys" or very short ones which

are usually open at the top.

Other species of crayfish remain in the water and do not burrow to the surface of the ground. Control of these crayfish may be accomplished by applying an insecticide, Lexone, at the rate of 5.4 pounds for each acre-foot of water.

If a small number of burrowing crayfish are present, the introduction of one ounce of creosote directly into the burrow will act as a control. Large populations render this process impractical because of the time and money involved.

There is no practical method to prevent burrowing other than eradication. Dams that are adequately designed and properly compacted usually do not fail as a result of crayfish damage.

Ques.: An article I read recently mentioned the use of a "flipjack pole." Could you tell me the type pole to which the author was referring?

Ans.: The flipjack pole may have different names, depending on the section of the country. This is nothing more than a long cane pole with a short line attached. A combination such as this allows the fisherman to reach far back into openings in the vegetation and thus entice the fish to strike.

Ques.: Is the mourning dove a native of this country or was it introduced?

Ans.: The mourning dove is a native of this country and is probably one of America's oldest game birds. Remains of this bird have been found in Pleistocene cave deposits in Arizona.

Ques.: Is it possible for a fish to regrow a fin that has been lost?

Ans.: A fish will frequently regenerate a fin that has been bitten or clipped off. This regenerated fin is often smaller or deformed in some way, so that it can be distinguished from a normal fin.

Ques.: After handling fish I have noticed a slimy substance left on my hands. What sort of substance is this?

Ans.: The slimy secretion to which you refer is a mucus which covers the fish. This mucus acts as a protective device and is very important. The slimy nature of this coating allows the fish to swim through the water with less resistance and it protects the fish from its natural enemies by making it difficult for the attacker to hold the fish. The coating also protects the fish from disease. After a fish has been handled by a person, much of this mucus has been removed, leaving the fish open to possible attack by a fungus, which often proves fatal.

Rocks are the raw materials.

Soils don't just simply happen! They are built by nature . . .

Rain — Wind: Weathering

Freezing and thawing

Chemical processes

Soil can be lost forever through poor land use

Or it can be made to support us.

SOIL

Good soil management is a science.

Help keep the soil where it belongs!

Clean water is only one result of soil conservation.

Good soil means more wildlife.

WISE USE OF VIRGINIA'S SOIL IS UP TO YOU!